

## HEDEOMA TODSENI (LABIATAE), A NEW AND RARE SPECIES FROM NEW MEXICO

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### ABSTRACT

*Hedeoma todsenii* is described from two populations in the San Andres Mountains of southcentral New Mexico. It is morphologically similar to *Hedeoma apiculatum*.

*Hedeoma* is a genus of 43 taxa (Irving, 1979) distributed principally in the southwestern United States and northern Mexico. Many of its taxonomic subgroups are composed of widespread and somewhat weedy annuals and perennials. In these the phenetic relationships of the species, as well as the naturalness of the various units themselves, are more or less apparent. The subgenus *Ciliatum*, however, comprises a small number of endemic species and, due to their relatively wide morphological discontinuities, relationships are difficult to discern and naturalness of the group is far from clear. A recent field survey of the San Andres Mountains of south-central New Mexico has resulted in discovery of a new species that greatly improves our understanding of species relationships within subgenus *Ciliatum*. For the first time the purported naturalness of *Ciliatum* can begin to be perceived.

### ***Hedeoma todsenii* Irving, sp. nov.**

Herbae perennes suffruticosae ad 12 cm altae, caulibus numerosis. Folia sessilia, coriacea et integra, 8–14 mm longa, 2–4 mm lata, lanceolata-elliptica; apices obtusi vel mucronati. Flores singulares, axillares. Calyx 11–12 mm longus; annulus in parte centrali tubi situs. Corolla aureorubens ad 35 mm longa non annulata (Fig. 1).

Suffrutescent caespitose perennials 10–18 cm high. Stems numerous, simple and canescent or puberulent with hairs retrorsely curling. Leaves coriaceous, entire, lanceolate-elliptic, subsessile 8–14 mm long, 2–4 mm wide; apex obtuse to retuse; midrib and margins slightly hispidulose-tuberculate; lower surface deeply glandular-punctate, the upper less so. Flowers solitary and well-spaced in the upper portions of the stems; peduncles ca. 1.5 mm long; pedicels ca. 3–5 mm long, canescent; bracteoles lanceolate, longer than pedicels. Calyx 11–12 mm long (base to tip of teeth), tubular-funnelform, not gibbous, minutely scabrous on the nerves and glandular-punctate between; upper teeth partially connate forming a conspicuously recurved upper lip, lobes lanceolate, ca. 1 mm wide, 1.5 mm long, sparsely ciliate; lower

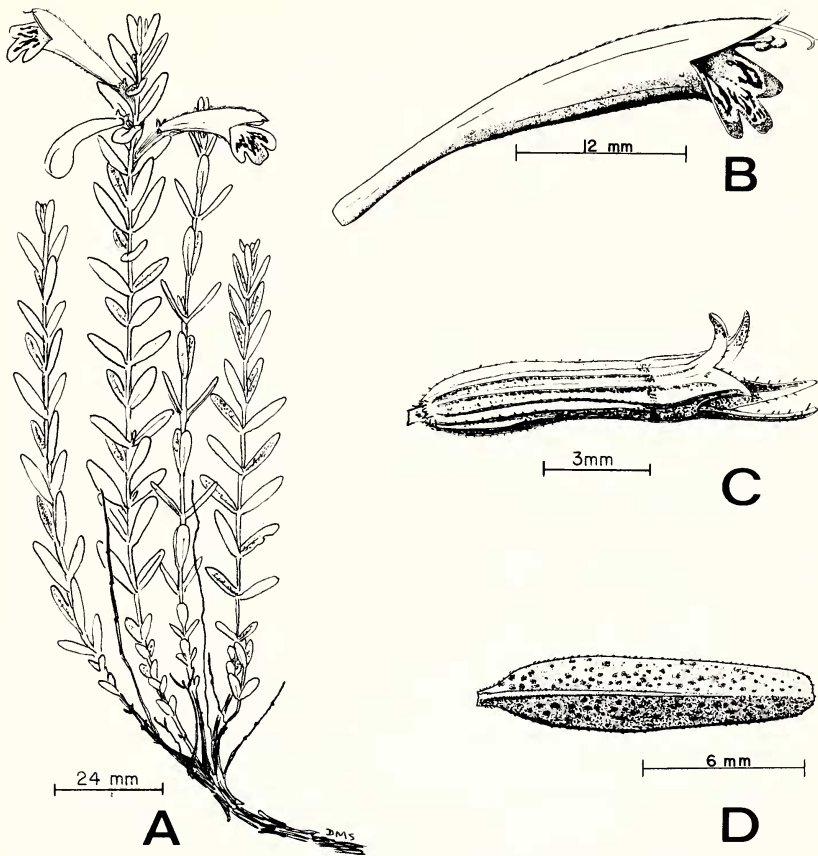


FIG. 1. Drawing of isotype (TEX) of *Hedeoma todsenii* Irving. A. habit; B. corolla; C. calyx; D. leaf undersurface.

teeth ascending, deltoid-aristate, 3.0–3.5 mm long, sparsely hirsute-ciliate; annulus ca. 1 mm wide, included and seated ca. 2 mm below juncture of upper and lower teeth. Corolla showy, up to 35 mm long, 6 mm wide at throat, sparsely pubescent in the tube but not annulate; the upper lip deeply obcordate, erect, up to 5 mm long, red in color on interior margins; lower lip streaked with red, recurved, the similar rounded lobes ca. 3.5 mm long, 3 mm wide; anthers exserted. Nutlets ca. 2 mm long, 1 mm wide, dark brown in color and weakly glaucous. Chromosome number unknown.

TYPE: USA, New Mexico, Sierra Co., San Andres Mountains, "On a steep north-facing gravelly gypseous limestone hillside in open pinon, 2 km S of Hardin Ranch in Section 34 R2E, T12S," 2000 m, 18 Aug 1978, T. K. Todsén SA 1-78 (Holotype: NY. Isotypes: US, TEX, NMC).

The discovery of *H. todsenii* adds a fifth species to a group of closely related endemics that form subgenus *Ciliatum* (Irving, 1979). *Hedeoma ciliolatum* and *H. pusillum* are restricted to gypsum outcrops near Galeana, Nuevo León, Mexico; *H. pilosum* has been collected only once from the calcareous summit of Old Blue Mountain in Trans-Pecos Texas; and *H. apiculatum* is known from only the protected canyons of the Guadalupe Mountains of Texas and New Mexico. Within this group, *H. todsenii* is most closely allied to *H. apiculatum*. The suffruticose, caespitose habit; the overall patterns of pubescence; the coriaceous, entire, lanceolate leaves; and the large tubular calyx with its deep-seated annulus are some of the morphological attributes that are common to both taxa.

*Hedeoma todsenii* and *H. apiculatum*, despite their obvious morphic similarities, differ in a number of characteristics. The most conspicuous is the large (up to 35 mm) yellow-red corolla of *H. todsenii* compared with the smaller (19–20 mm) lavender corolla of *H. apiculatum*. The calyces of *H. todsenii* are also longer than those of *H. apiculatum*, 11–12 mm and 9–10 mm, respectively. The leaves of *H. todsenii* are largely obtuse, and the anthers are exserted. In contrast, the leaves of *H. apiculatum* are apiculate at the apex and the anthers are included.

The morphological relationships between *H. todsenii* and *H. apiculatum* parallel those displayed by *H. ciliolatum* and *H. pusillum*. *Hedeoma pusillum* is the diminutive counterpart of *H. ciliolatum* with the most conspicuous difference being the large orange-red corolla of *H. ciliolatum* and the small lavender corolla of *H. pusillum*. Similarly, *H. apiculatum* can be viewed as a somewhat smaller form of *H. todsenii* with also the primary difference residing in the size and color of the corolla.

Within *Hedeoma* large corollas and exserted anthers foster outbreeding and are considered primitive traits; smaller corollas with anthers included facilitate autogamy and are considered derived characters. Thus, we can speculate that both *H. pusillum* and *H. apiculatum* are derived from their larger-flowered counterparts, *H. ciliolatum* and *H. todsenii*. *Hedeoma apiculatum* has a diploid chromosome number of  $2n = 144$ , which also indicates a derived position within *Hedeoma* ( $x = 9$ ; Irving, 1976).

In addition to its close affinity with *H. apiculatum*, *H. todsenii* shares a number of morphological similarities with *H. ciliolatum*, and thus *H. ciliolatum*, *H. pusillum*, *H. apiculatum*, and *H. todsenii* are tied into a coherent and natural unit. Of these similarities, the most salient is morphology of the corolla. Corolla size and color are nearly identical in *H. todsenii* and *H. ciliolatum*.

*Hedeoma todsenii* is known from two small populations and, because of its highly restricted distribution, should be identified as an endangered or threatened species.

The specific epithet honors Dr. Thomas K. Todsén, Research Associate in Biology, New Mexico State University, who discovered the species during his continuing survey of the flora of the San Andrés Mountains.

#### ACKNOWLEDGMENTS

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#### LITERATURE CITED

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